

FINAL

PROJECT PROPOSAL:

ARDUINO BASED INDOOR
SEEDLINGS GROWING CHAMBER

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Objective of the project

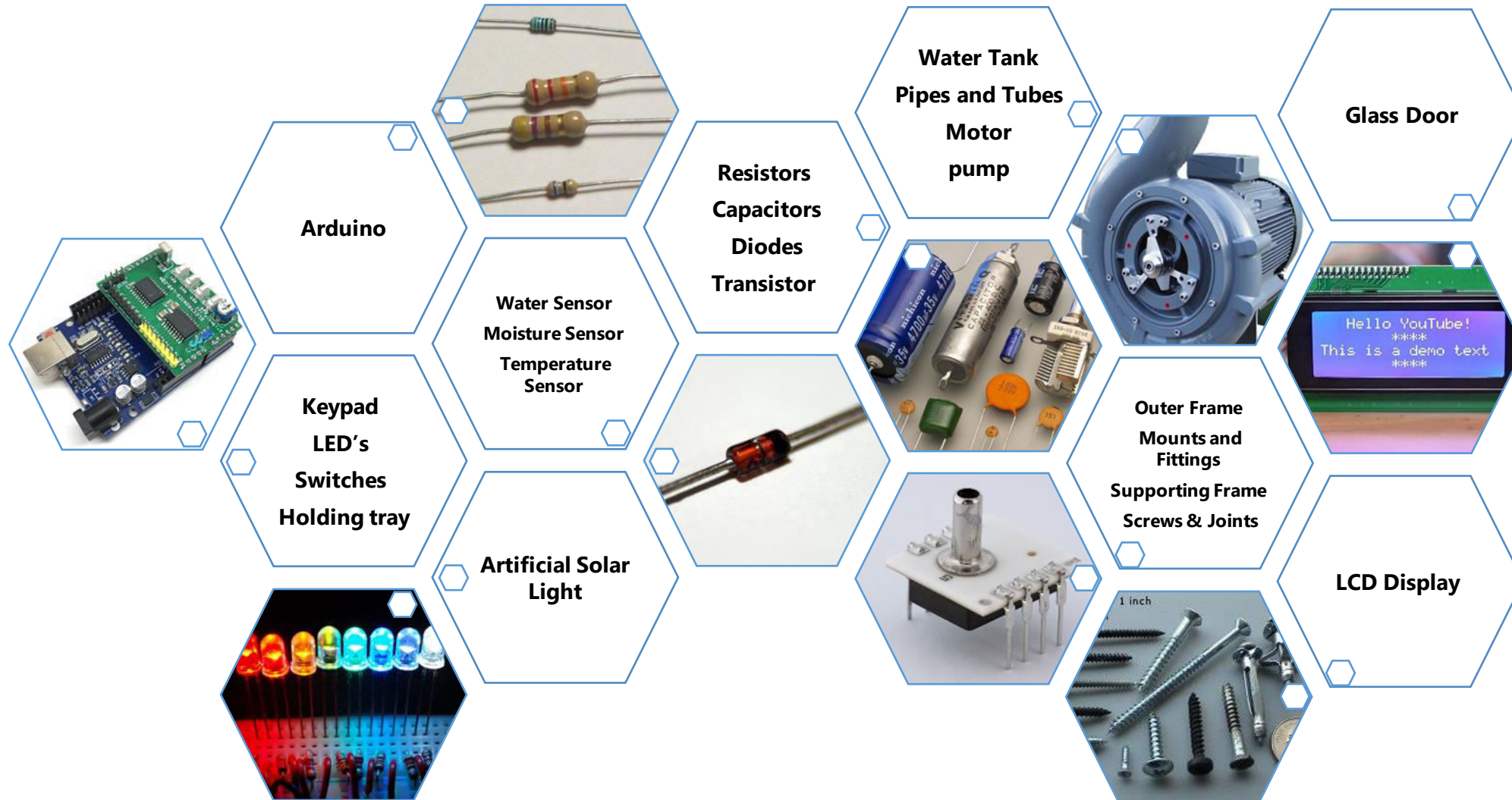
Our project is a subset of hydroculture which involves growing plants (usually crops) without soil, by using mineral nutrient solutions. It is a systematic way to skip the soil, sub in a different material to support the roots of the plant, and grow crops directly in nutrient-rich water.

. Growing seasons and regions are in major flux right now as temperatures change and growing conditions change along with them. Even in “normal” conditions, there are plenty of places where the ground just isn’t conducive for farming (like deserts, concrete jungles).
— It will allow growers to produce food anywhere in the world, at any time of the year, and to net higher yields with fewer resources



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Necessary Components



Cost Estimations

Components	Cost
Arduino	700/=
Water Sensor	278.99/=
Moisture Sensor	100/=
Temperature Sensor	120/=
Artificial Solar Light	70/=
Pump Motor	195/=
LCD Display	211/=
Keypad	120/=
LED's	68/=
Switches	15/=
Holding Tray	50/=
Water Tank	50/=
Pipes and Tubes	20/=
Resistors	2/=
Capacitors	20/=
Diodes	20/=
Transistors	20/=
Screws & Joints	10/=
Total 2069/=	

Working Principle

- The system makes use of arduino controller interfaced with a keypad to get user inputs on the water change and flow, indoor optimum temperature parameters. The system then monitors the indoor conditions using water sensor, moisture and temperature sensor to always keep a tap on indoor conditions.

The system uses the motor to ensure water level is maintained using the pump motor to adjust water level, the moisture and temperature sensors are monitored to maintain best temperature and moisture conditions for growth.

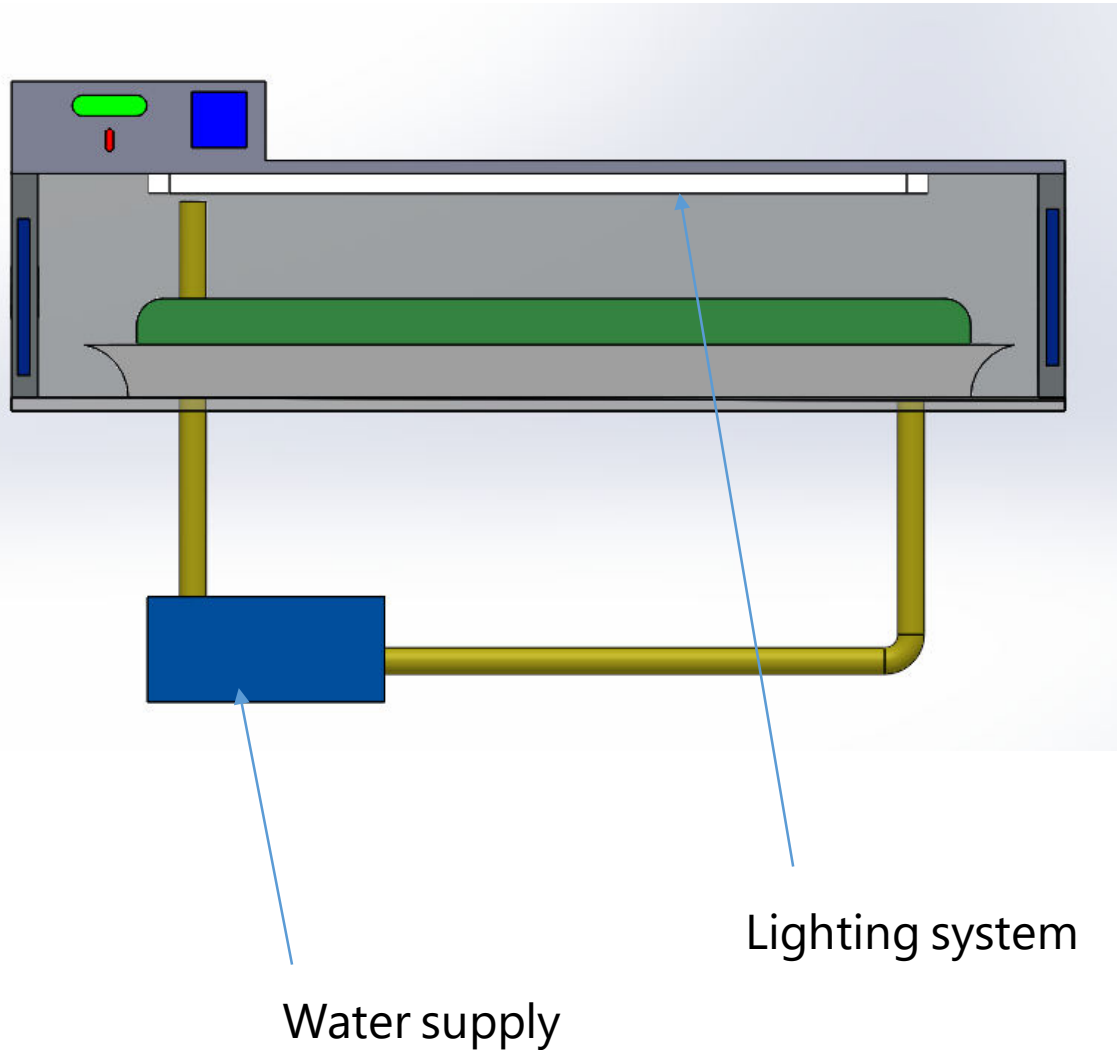
The indoor artificial sunlight is switched on and off as per specified by the user automatically.

This entire operation is efficiently managed by an arduino controller to ensure the entire process is repeated regularly without fail. The system also sounds an alarm if the water tank runs out of water. Thus the system ensures automatic indoor fodder grow system using arduino controller..

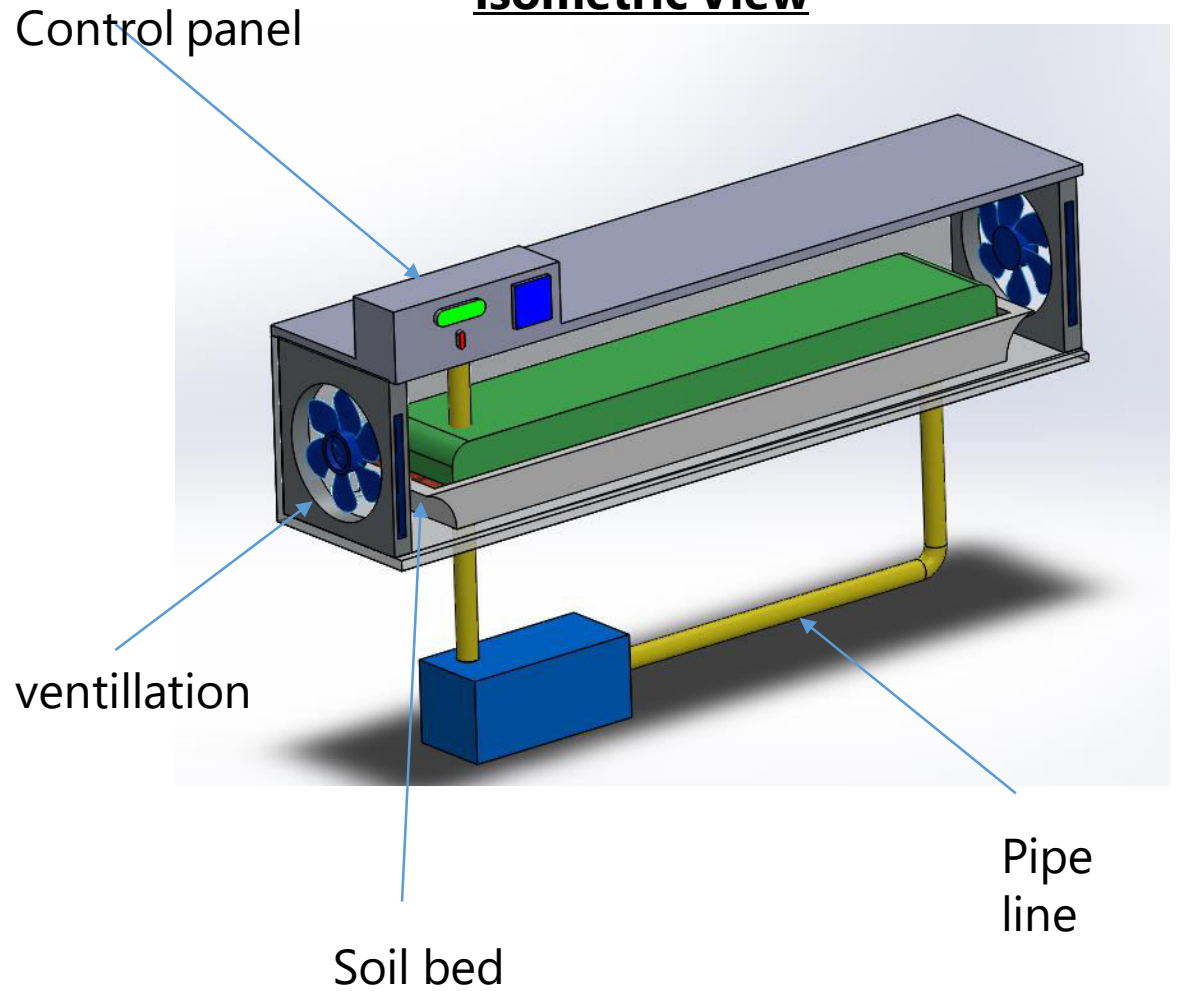


Schematic Diagram:

Front View



Isometric View



ADVANTAGES

Maximizes Space. Hydroponics requires far less space than plants grown in soil..

Conserves Water.

Facilitates a Micro-Climate.

Produces Higher Yields.

Require Less Labor.

Needs No Soil.

Produces Higher Quality Food.

Reduces Supply Chain

Fewer Chemicals.

Faster Growth. ...

Nutrient Control..

Grow Indoors.

Healthier Plants.

Bigger Yields



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Project Goals

Goal 1

Economical benefit



Goal 2

Time Management



Goal 3

Water Save



Goal 4

Mass Production





FINAL PROJECT PROPOSAL

Gas Leakage detector using
Arduino and GSM module

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About the Project

The device will instantly detect if there is excess concentration of gas in the vicinity and will give alarm if such leakage happens

01



Major Requirements

- Arduino UNO
- GSM Module

02



Project Goals

To ensure safety of the household or industry from fire accidents created due to gas leakage

03



04

Measurement

This is a measurement project. The gas sensor would measure gas concentration. On the basis of arduino code, if concentration exceeds threshold amount, the device would send signal



05

Project Stages

- Designing the circuit
- Coding for arduino
- Simulation
- Procreate the device



ABOUT THE PROJECT

Gas Leakage Detector

In this project we are going to design a gas leakage detector using GSM and arduino and send a signal via both SMS and alarm. The device would be able to detect
a) LPG (liquefied petroleum gas) (b) Methane gas.

WHAT WE ARE WORKING ON



SECURE

To ensure safety from fire accidents in both household and industries



AFFORDABLE

The product will be cost efficient and affordable for everyone



FAST AND RELIABLE

Response time for the alarm is negligible. So, it alarms instantly after the leakage giving enough time to fix the problem

GOAL OF THE PROJECT

Undetected gas leakage and smoke are often the cause of major explosions and accidents. These incidents may occur in places like houses or industries. Besides affecting the economy, a lot of lives have been affected in the past. But these kinds of accidents can be avoided with proper precautions. One of the safety measures is the Gas Leakage Detector.



NOW



Safety against only LPG



Only buzzer system keeping the household vulnerable when nobody is in the house



High Price



FUTURE



Ensuring safety even for empty household through use of SMS



Protection against LPG and Methane



Cost Efficient



MAJOR REQUIREMENTS

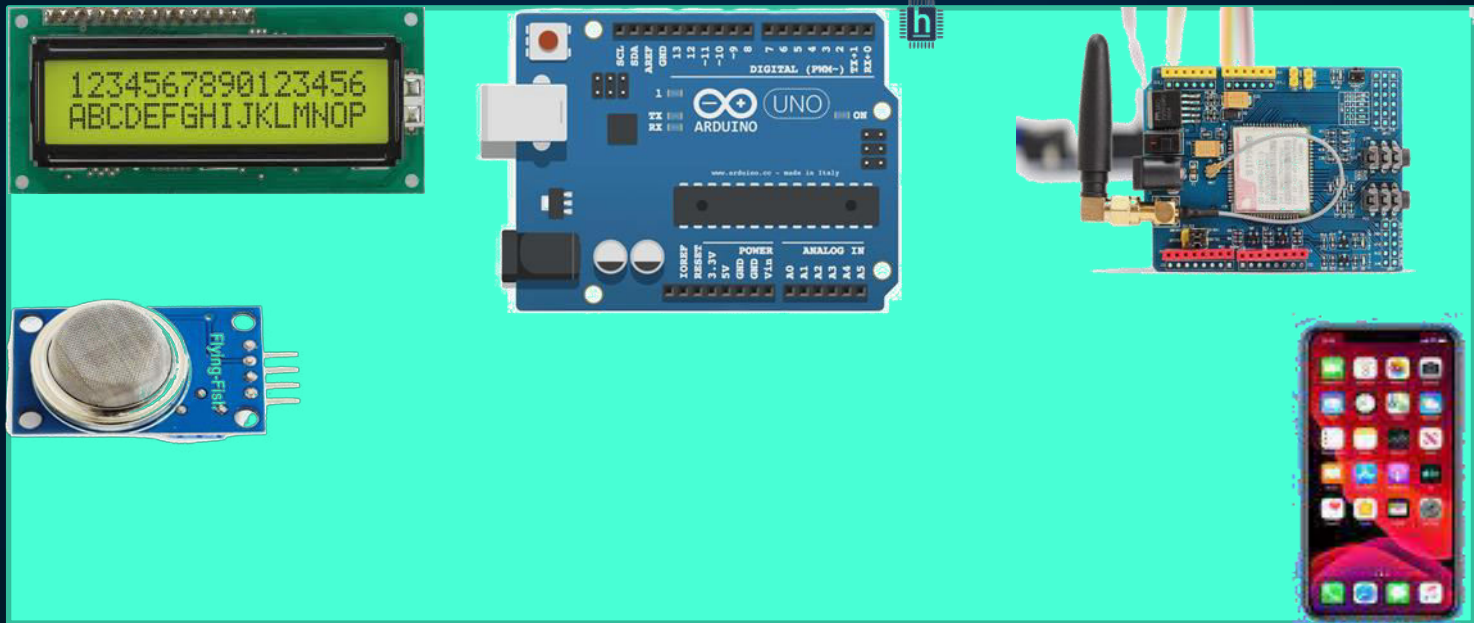
1. Arduino Pro Mini
2. LPG Gas sensor Module
3. 16x2 LCD
4. Bread board
5. 9 volt battery
6. Connecting wires

BUDGET

Cost Estimations

Name of the Component	Approximate Price
1.Arduino UNO Board, Connecting Wires, Breadboard, Arduino Power Supply.	Tk.900
2.GSM module	Tk. 1000
3. LCD Display	Tk. 200
4. Gas Sensor	Tk. 300
5.10k potentiometer	Tk. 20
TOTAL	Tk.2420

Schematic Diagram



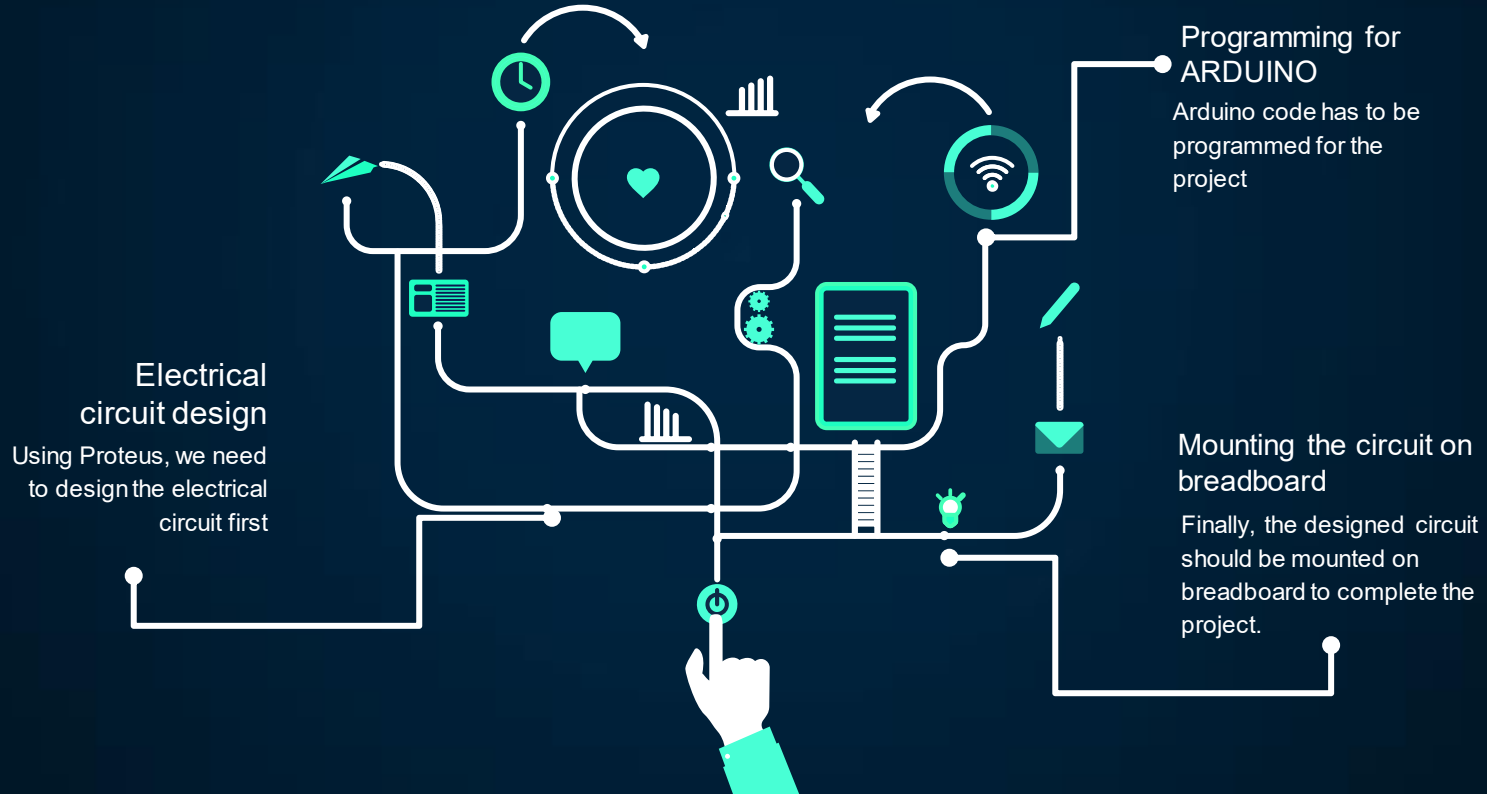
What and How Will It Measure

❖ GAS CONCENTRATION MEASUREMENT

The main objective of this circuit is to measure the LPG gas leak. In this project , we will be using an LPG gas sensor module to detect LPG gas. The combustible gas detection like LPG is mainly done with the help of semiconductor present in the sensor which reacts to the presence of combustible gas in the air and sends a signal to the arduino as a digital signal.

In general, the sensor can detect LPG in the concentration of 200 – 10000 ppm. If the concentration exceeds the threshold amount, signal is sent by the help of arduino.

PROJECT STAGES



CHALLENGES

1.

Since this circuit is designed to detect LPG and methane gas, and that too in a limited space, it is not suitable for those industries where other gas leaks may be present in a larger area.

2.

The circuit which we make needs to maintain intrinsic safety, because faulty connections may lead to ignition by the detection device itself which will create further accidents.

THE TEAM



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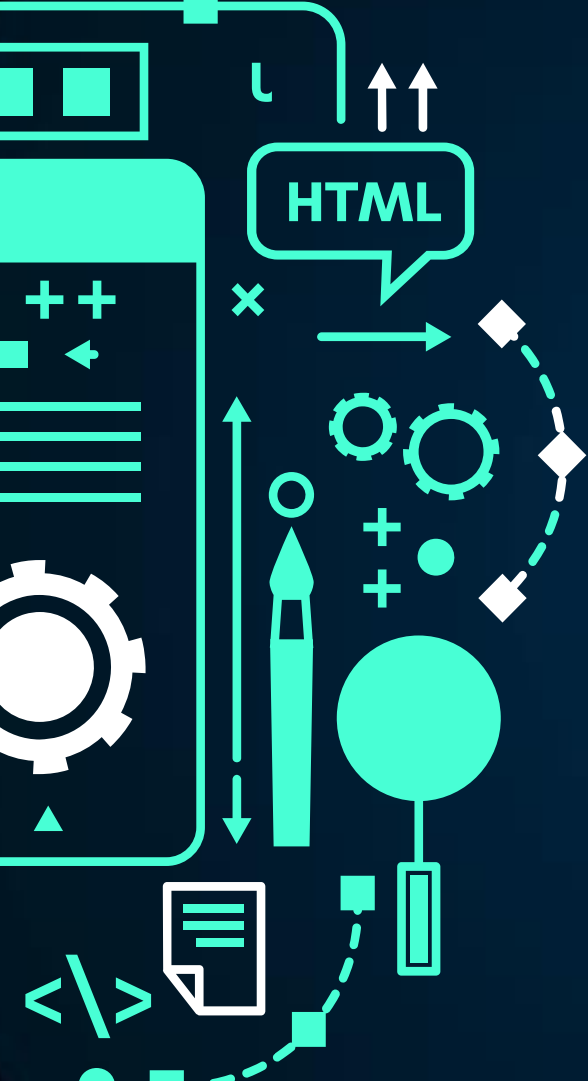
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THANKS!

Why automated indoor seedling grow chamber is our first priority?

1. **Less Space:** With the advancement of urbanization, fertile land for cultivation is shrinking in amount. In our experiment, we are doing it with hydroponic system. So, there is no need of soil. The total project is going to be indoors, So within small land, we can build multi-storied farming facility even in the basement of a multi-storied building. Thus, it is possible to ensure larger farming without vast land. This is very much important specially for countries like Bangladesh that have small territory but larger population.
2. **Chemical free farming:** Hydroponic system eliminates the need for soil as well as the need for soil-borne pesticides and artificial fertilizers. Thus, seedling grow in a pure environment without the use of external harmful agents.
3. **Climate independency:** As the chamber is grown indoors, climate isn't a big factor in this. The nutrition, humidity, temperature- everything is going to be monitored from outside automatically through the use of this Arduino based monitoring system. So, proper care for the growth of the seedling can be ensured. As seedlings need much more care than bigger plants and are more vulnerable to extreme weather, ensuring proper environment and nutrition is a must for them. In our project, we can ensure adequate light, humidity, air flow and nutrition- as a whole, we can ensure exact system to grow seedling.
4. **Cost Efficiency:** Though our project is based on a smaller level, it is possible to implement the same setup for a bigger farm. On a larger scale, the cost of the project will be very less, lesser than on land farming for seedlings.
5. **Proper implementation:** The project can be implemented with simple circuit elements and mechanical devices that are easily available at comparatively lower cost. The programming for the project, on the other hand, is a bit complicated. But it is possible to code with enough time. So, the project is possible to implement.

In conclusion, for an over populated country like Bangladesh needs more food supply with limited land and our project will help to reduce this problem even during natural disasters like flood, drought, tidal surge this project is our first priority.